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(71) Applicant *(for all designated States except US)*: **TOKYO ELECTRON LIMITED** [JP/JP]; TBS Broadcast Center, 3-6, Akasaka 5-chome, Minato-ku, Tokyo 107-8481 (JP).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **YUE, Hongyu** [US/US]; 5705 Janabyrd Lane, Austin, TX 78479 (US). **LAM, Hieu, A.** [US/US]; 5808 Abingdon Drive, Richardson, TX 75082 (US).

(74) Agent: **CASEY, Michael, R.**; Oblon, Spivak, McClelland, Maier & Neustadt, P.C., 1940 Duke Street, Alexandria, VA 22314 (US).

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(54) Title: METHOD AND APPARATUS FOR DETERMINING AN ETCH PROPERTY USING AN ENDPOINT SIGNAL

(57) Abstract: The present invention presents a plasma processing system for etching a layer on a substrate comprising a process chamber, a diagnostic system coupled to the process chamber and configured to measure at least one endpoint signal, and a controller coupled to the diagnostic system and configured to determine in-situ at least one of an etch rate and an etch rate uniformity of the etching from the endpoint signal. Furthermore, an in-situ method of determining an etch property for etching a layer on a substrate in a plasma processing system is presented comprising the steps: providing a thickness of the layer; etching the layer on the substrate; measuring at least one endpoint signal using a diagnostic system coupled to the plasma processing system, wherein the endpoint signal comprises an endpoint transition; and determining the etch rate from a ratio of the thickness to a difference between a time during the endpoint transition and a starting time of the etching.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/31528

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H05H 1/00; H01L 21/00
US CL : 156/345.21; 438/5

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 156/345.21; 438/5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST text and image search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,658,418 A (CORONEL et al) 19 AUGUST 1997 (19.08.1997) entire document.	1-4, 6-23,25-43
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Y	US 5,467,013 A (WILLIAMS et al) 14 NOVEMBER 1995 (14.11.1995) column 2, line 52 through column 6, line 26.	5,24
A	US 6,450,683 A (LEE) 17 SEPTEMBER 2002 (17.09.2002) column 2, line 52 through column 5, line 67.	1-43
A	US 5,888,337 A (SAITO) 30 MARCH 1999 (30.03.1999) column 4, line 1 through column 8, line 50.	1-43

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Parviz Hassanzadeh Telephone No. (571)272-1700

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